CALFED Water Quality Program Development

Issues for Drinking Water;
Core Program Activities for Water Quality Improvement

Drinking Water: Source Water Quality Issues

- Source water + treatment = drinking water
- If source water too poor, treatment may be problematical
  - Treated water may remain unsafe
  - Treated water may be unacceptable to consumers
  - Treated water may not meet standards
  - Operations may not be able to handle unusual water quality changes
  - Treatment may be too expensive for consumers

Drinking Water: Source Constituents of Concern

- **Pathogens**- direct public health problem
- **Turbidity**- direct compliance problem
- **Organic carbon (TOC), bromide**- indirect problems (DBPs via treatment) for regulatory compliance, public health
- **Nutrients/ algae**- problems for consumer acceptability, treatment
- **Total dissolved solids (TDS)/ salinity**- direct problem for consumer acceptability

Regulatory Issues

- **Enhanced Surface Water Treatment Rules**
  - Interim ESWTR due 11/98, enforced by 11/01
    - Filtration requirements
    - No *Cryptosporidium* disinfection
  - Filter Backwash Recycling Rule due 8/00, enforced by 8/03
  - Long Term 1 ESWTR due 11/00, enforced by 11/03
  - LT 2 ESWTR due 5/02, enforced by 5/05
    - Unknown requirements

Regulatory Issues

- **Disinfectants and Disinfection Byproducts Rules**
  - Stage 1 D/DBPR due 11/98, enforced by 11/01
    - MCLs for TTHMs, HAAs, bromate
    - Action Level for TOC
  - Stage 2 D/DBPR due 5/02, enforced by 5/05
    - Unknown requirements

Stage 1 D/DBPR Standards

- Maximum Contaminant Levels
  - 0.080 mg/L total trihalomethanes
  - 0.060 mg/L haloacetic acids (5)
  - 1.0 mg/L chlorite
  - 0.010 mg/L bromate
- Maximum Residual Disinfectant Levels
  - 4.0 mg/L chlorine (as Cl2)
  - 4.0 mg/L chloramine (as Cl2)
  - 0.8 mg/L chlorine dioxide (as ClO2)
- Action Level
  - 2.0 mg/L total organic carbon

Drinking Water: Where are the Points of Concern?

- Not entire Bay-Delta, but at entry to systems
  - North Bay Aqueduct intake at Barker Slough
  - Contra Costa WD intakes at Mallard Slough, Rock Slough and Old River
  - Clifton Court Forebay and South Bay Aqueduct
  - Tracy intake on Delta Mendota Canal
  - San Luis Reservoir
  - Terminal branches and storage reservoirs of CA Aqueduct
- Opportunities to focus on more-limited areas

Key Considerations for Core Program Activities Benefiting Drinking Water

- New regulations will be enforced before potential benefits from CALFED Alternatives could be had
  - Shorter-term projects should be favored
- Not much can be done about bromide in core program, but it is not the only problem
  - Anything that can substantially improve water quality at intakes should be considered
- All drinking water exporters should benefit
- Minimizing degradation of exported water is important

CALFED Core Water Quality Activities for Drinking Water

- Implementation activities
  - Pilot studies
  - Watershed management activities
- Research activities
  - Monitoring and assessment studies
  - Algal control studies

Watershed Management Programs

- Stakeholder-based development and implementation
- Local programs
  - North Bay Aqueduct at Barker Slough
  - Clifton Court and South Bay Aqueduct
  - Old River near CCWD intake
  - Reservoirs
- Regional programs
  - Sacramento River Watershed Program
  - San Joaquin River Watershed Program

Proposed Bay-Delta Regional Core DW Activities

- Control urban wastewater and stormwater discharges of DW contaminants
  - Focus on permit process and requirements
- Reduce TOC, salinity and nutrient loadings from Delta agriculture
- Minimize pathogens from recreational boaters by education and enforcement
- Locate and manage restoration projects to minimize adverse TOC loadings at intakes

Control Urban Wastewater and Stormwater Discharges

- Loadings of pathogens, nutrients, etc. from urban wastewater and stormwater discharges may be problematical
- CEQA and NPDES processes do not adequately address increased loadings over time or aggregate loadings over large areas
- Recommend discussions between SWRCB, DWR, DHS, drinking water and wastewater utilities

Reduce Constituent Loadings from Delta Agriculture

- Reduce frequency of leaching
- Improve irrigation efficiency
- Manage discharge timing via storage
- Reroute agricultural drains
- Treat agricultural drainage
- Fallow or convert to low-input crops
- Convert to wetlands

Concern for Adverse Impacts from Habitat Restoration

- Creation of wetlands or other habitat restoration may yield increases in adverse TOC loadings near intakes
- Some types of projects may be more problematical than others
- Magnitude of potential problem unknown
- Dedicated research is necessary

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Water Quality Activities for North Bay Aqueduct Users

- Implement watershed management plan to control pathogens, TOC and turbidity loadings around Barker Slough intake
  - Recently funded at $580,000
- Conduct studies on other TOC sources in watershed
- Consider relocating intake away from Barker Slough

Water Quality Activities at Contra Costa WD Intakes

- Relocate Veale Tract agricultural drain impacting Rock Slough
- Relocate or mitigate Discovery Bay and other wastewater discharges into Old River near intake
- Identify and mitigate high-impact agricultural drains near Old River intake

Water Quality Activities for South Bay Aqueduct Users

- Implement a watershed management program to control nutrient loadings, algae in Clifton Court and aqueduct
- Implement a watershed management program at Lake Del Valle
  - May include swimming and boating control
- Implement a management program in Arroyo Valle watershed

Water Quality Activities for Tracy Intake and DMC

- Relocate or control Tracy wastewater discharges near intake to control pathogens and nutrients
- Mitigate high-impact agricultural drains to control TDS and TOC
- Improve control of marina and recreational boating discharges to reduce pathogen and MTBE loadings
- Address future urbanization impacts

WQ Activities for Southern Aqueducts and Reservoirs

- Prevent storm-related agricultural runoff into aqueducts to control pathogens, nutrients
- Eliminate whole body contact in reservoirs to control pathogens
- Implement watershed management at reservoirs to control pathogens and nutrients
- Control recreational boating to minimize MTBE contamination

Proposed WQ Research Activities

- Many unknowns exist
  - Basic understanding of contaminants
  - Characterization of sources
  - Utility of remediations
- Algal growth and mitigation
- Agricultural drainage impacts
- Agricultural drainage control effectiveness
- Habitat restoration and TOC

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